

OCT 31 1929



# SCIENCE NEWS-LETTER

*The Weekly Summary of Current Science*

A SCIENCE SERVICE PUBLICATION



\$5 a year

15c a copy



October 26, 1929



EDWIN EMERY SLOSSON  
1865-1929

Vol. XVI

No. 446

# Who Found Greatness in Simplicity...

*Multitudinous were the tributes that were sent to Dr. Slosson's family and Science Service. It is impossible to print them all. It has seemed more fitting to gather together here excerpts from some of them as a composite expression of sympathy and appreciation of his great work.*

I admired Dr. Slosson for his great attainments, his kindliness and his wisdom. I feel that I have lost a warm friend and America has lost a great force in the advancement of science... The University of Kansas mourns the loss of one of her most distinguished and beloved sons... Literature and science alike have suffered an irreparable loss... America

has lost one of its finest and most useful sons... I never had a better friend than Ned. The loss is irreparable... Gifted and faithful and generous, his name is lasting here and his work beyond must still be creative and useful... The memory of Dr. Slosson is beautiful and will always be an inspiration and a cause for gratitude to God. His brilliant mind and sweet disposition will never be forgotten... He greatly endeared himself to us all, and his passing means to us a sincere loss... He did a great work in presenting the discoveries of modern science to the public in in such a way that laymen could understand them, and he always stood

squarely for the great truth that science and religion are complementary, not antagonistic... Science will be a great loser, for no one I know had his gift, a great gift... It is difficult to imagine the enormous and helpful activity of such a man, and sorrowful to think that now the world must be deprived of it... A man whose greatness of mind and of spirit made him unostentatious in the company of one who had not attained distinction. A man whom the literary and the scientific world delighted to honor; yet one willing to listen as well as to speak. A man who found greatness in simplicity.

*Science News-Letter, October 26, 1929*

## Make More Secure the Heritage...

*Prayer by Rev. Moses R. Lovell at the funeral of Dr. Edwin E. Slosson, October 18.*

O God, who art from everlasting unto everlasting—before whom the generations flourish and fade—who gatherest them all unto Thyself—as the earth draws to her bosom the autumn leaves—Age after age of the living seek Thee and find that of Thy faithfulness there is no end. As our fathers and our fathers' fathers walked steadfast in the joy and confidence of Thy companionship—so may we, their children, this day, and in all the days to come, be strengthened and upheld.

We thank Thee that in this hour when Thou hast summoned him whom we have known and loved—We thank Thee that in the very midst of our present sorrow there is an inextinguishable joy. For him who hast been Thy faithful servant so many years—in whom we have been privileged to see life rise to its abundance in mental and moral and spiritual vigor—dedicate its energies to high and noble purposes—give itself in unstinted measure to human advancement and the conquest of the

lower by the highest; for him who has left so intimately his impress upon our hearts, and through high achievement on the far flung areas of a Nation's thought and life; for him whom Thou hast shared, we give Thee most grateful thanks—and in the very hour of his withdrawal from us, we sense afresh the new won victory of an irrepressible and unconquerable spirit, and our hearts are lifted up.

We know not why, Lord God, the span of his years might not have

been lengthened as was our fervent hope. Thy ways are evidently not our own. We only know that where others failed he did achieve—where others lost, he won—where others gave up, he held firmly to the course and marched breast forward many leagues...

Let something, we do pray, of the mantle that was his fall upon us also—that in larger measure we may enter into his labors—further the aims which he espoused—and make more secure the heritage he left. Upon us all, and especially upon them who most intimately cherish his love and memory, grant the benediction of Thy comfort and Thy peace. And let this day, O God, be for us all a memorial to one who like the mariner hull down upon the sea—finally dropping beneath the horizon of man's ken—sails on—and on—and on—ever westward toward life's remote and most glorious haven—in the exultant strength of a victorious spirit and in the eternal care and keeping of Thyself.

And unto Thee shall be all honor and glory—world without end—Amen.

*Science News-Letter, October 26, 1929*

### In This Issue

A great popularizer, p. 251—More Slossons, p. 251—Evident humanism, p. 252—Adventurous worship, p. 252—Inimitable humor, p. 253—Pioneer advocate, p. 253—Ancestral Eskimos, p. 254—Test for color-blindness, p. 254—Gas detector, p. 254—Father of the Gods, p. 255—Methanol blindness, p. 257—Newspaper tributes, p. 258—Writer of many books, p. 258—Armadillo, p. 259—Curie, p. 260—Bacteriophage, p. 261—Aboriginal dentistry, p. 262—Slosson classics, p. 263.



SCIENCE NEWS-LETTER, The Weekly Summary of Current Science. Published by Science Service, Inc., the Institution for the Popularization of Science organized under the auspices of the National Academy of Sciences, the National Research Council and the American Association for the Advancement of Science.

Edited by Watson Davis.

Publication Office, 1918 Harford Ave., Balti-

more, Md. Editorial and Executive Office, 21st and B Sts., N. W., Washington, D. C. Address all communications to Washington, D. C. Cable address: Scienserve, Washington.

Entered as second class matter October 1, 1926, at the postoffice at Baltimore, Md., under the act of March 3, 1879. Established in mimeographed form March 13, 1922. Title registered as trade-mark, U. S. Patent Office.

Subscription rate—\$5.00 a year postpaid. 15 cents a copy. Ten or more copies to same address, 5 cents a copy. Special reduced subscrip-

tion rates are available to members of the American Association for the Advancement of Science.

Advertising rates furnished on application.

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# A Great Popularizer of Science . . .

**DR. EDWIN E. SLOSSON,**  
*Director of Science Service, died*  
*October 15, 1929, at 6:55 p. m.*

As a great popularizer of science millions of readers knew Dr. Edwin E. Slosson. He was the man who made chemistry famous for the general public. As leader and inspirer of science's effort to hand on to the general non-technical reader the fruit of scientific research and knowledge, Dr. Slosson, director of Science Service, inaugurated a new relationship between the man in the laboratory and the man in the street.

Not quite a decade ago when far-seeing scientists and a great newspaperman, the late E. W. Scripps, joined in founding Science Service, the institution for the popularization of science, Dr. Slosson was chosen its editor. Already his book "Creative Chemistry" was selling like a novel. It gave the ordinary person the romance and facts of this great science that had played an important part in the war. Dr. Slosson's great energy and ability were thrown into his new task of relating to newspaper readers the facts and implications of all science in such a way that all might understand. And Science Service grew until now millions read its dispatches and articles in newspapers, magazines and books.

From Dr. Slosson's pen there came such books as "Chats on Science", "Snapshots of Science," "Keeping Up With Science" and "Plots and Personalities" written in collaboration with Prof. June Downey. His lay sermons

relating science with religion were published as "Sermons of a Chemist". Sir Oliver Lodge recommended his "Easy Lessons in Einstein" as the best book to convey some idea of the theory of relativity to the general reader. Thomas A. Edison wrote of him in a personal letter: "Slosson is a 'Star' in lucidity". His lectures were heard by thousands and they have been printed in textbooks, magazines and scientific proceedings alike. The most recent Smithsonian Institution report contains a recent address on "The Coming of the Coal Age". For several years he had been a regular contributor to *Collier's*.

Even during his last illness from organic heart trouble, he characteristically insisted upon knowing the complex structural chemical formula of one of the medicines that had been prescribed. This desire to know was coupled with an extraordinary ability to tell the ordinary person what he had found out about what scientists were doing.

Thirteen years as professor in the chemical laboratory at the University of Wyoming and the Wyoming Agricultural Experiment Station gave Dr. Slosson recognition and experience as a chemist. But mixed with his love of science was his feeling and ability in literature. Both Phi Beta Kappa and Sigma Xi, rival literary and scientific honorary societies, had claimed and initiated him when he was graduated from the University of Kansas, his native state. So when he was offered a position on the *Independent* magazine in New York

after he had worked on its staff in lieu of his vacation from university duties, he moved to New York and became a literary editor. Editor though he was in title and function, he remained a scientist and chemist, injecting into his magazine his explanations of science that found their full flower in his writings for Science Service.

As soon as Slosson, the young chemist, got a job he married May Preston, the first woman to receive a Ph. D. from Cornell University. In order to get even with his wife, as Dr. Slosson once put it, he had to secure a Ph. D. of his own which he did from the University of Chicago by working summers.

Dr. Slosson was born of old colonial, New England stock on both sides, coming from England or Scotland. He once wrote in a biography of himself: "He can boast (although he never does) of three Mayflower ancestors: Miles Standish, Elder Brewster and John Tilley." His father was one of the earliest of Kansas settlers who came from New York to help make Kansas territory a free state. Dr. Slosson said he derived his love of books from his mother, who was a New York school-ma'am.

His great part in the gigantic and never ending work of science popularization was the climax to Dr. Slosson's life and the most effective tribute of his associates in science and journalism will be to carry it on.

*Science News-Letter, October 20, 1929*

## Each Science Shall Have Its Slosson . . .

*Memorial services for Dr. Slosson were held by the Mount Pleasant Congregational Church on Sunday, October 20. On behalf of Science Service, Dr. William E. Ritter, honorary president, delivered one of the four short addresses. His tribute to Dr. Slosson's scientific work is printed below:*

The closing event of a unique human career very noble from having made the most of its remarkable innate endowment and all the influences of the outer world which, from beginning to end, acted upon it. Thus may be characterized the life

of our dear friend and fellow-worker who has gone from among us.

In the few words that I can speak at this time I wish I might express something of my estimate of the value for human welfare of Edwin Emery Slosson's scientific work.

That Slosson was primarily a popularizer rather than an investigator is too well known to need insisting upon. But that he never for a moment lost sight of the fact that popularization is utterly futile—even dangerous—except on the basis of the most rigorous and conscientious research, is less generally

known and appreciated than it should be.

It is also too generally known to need saying in so many words that chemistry was the realm of nature in which he was technically trained, in which he had earlier done research, and in which he was later preeminent as a popularizer. His wide-reaching imagination, his penetrating reason and his facile command of language enabled him to speak of phenomena from many realms of nature with charming simplicity. But it was in the chemical domain that his success was transcendent. Nothing (*Turn to next page*)



## Each Science Shall Have Its Slosson—Continued

quite comparable to it has ever been achieved in any natural science, so far as I know. It is hardly overstating the case to say that through his work almost the whole rank and file of a great nation is becoming not only chemically minded but chemically spirited. Becoming, I say, for his many writings headed by *Creative Chemistry*, are a national heritage the influence of which will go on for years to come.

A fact about his work that merits special attention is the way it is calculated to bring home to every one that almost every minutest contact of us moderns with the external world involves in one way or another the results of chemical science. Hardly a move do we make, from our awaking in the morning of one day till our awaking in the morning of the next, that is not somehow beset with something done by the chemist in his role of either researcher or engineer.

We live in an environment today a large, unescapable, and vital portion of which is made by the sciences of chemistry and physics.

Vast as is the economic, the sociologic, the political and other meaning of this for our physical life, of much greater significance is it, I am quite sure, for our spiritual life.

No one, I think, has perceived more of this meaning of chemistry for human welfare than has Slosson.

The point I am desirous of making in connection with Slosson's conjoined work as a popularizer of chemistry and as director of Science Service is this: I am convinced that every one of the natural sciences has, in its own peculiar way, just as profound a meaning for man's spiritual life as has chemistry.

Only in these very last decades has psychology begun to reveal the intricate and wholly inseparable way in which our rational and our emotional lives are interpenetrated. The incomparable sublimity and grandeur of the sidereal system being revealed by modern astronomy, and the transporting beauty of autumnal foliage on display at this hour all over our broad continent as revealed to reasoned observation, are but part and parcel of our intelligently emotional response in these realms. This is an order of truth the great significance of which for human life we are only beginning to grasp.

Hence it is that when each of the

sciences shall have had its Slosson, that is to say, an investigator as to rationality and training and a poet as to heart and life work, the entire life of cultured mankind, scholar and commoner alike, will have assumed an attitude toward themselves and the whole limitless scheme of things that will be greatly different from anything the life of man has hitherto known.

May I hint my meaning further by an illustration? A dear fourteen-year-old girl friend of mine has just written as follows of her religious experiences: "Two years ago I was confirmed. About a month after that I began to wonder just what I had let myself in for. . . . Then I went to mother and asked her all my questions. . . . When I asked her about the Universe she told me something, I can't remember what, but suddenly for an instant I felt as if I understood everything and all was made clear. Only an instant but a most precious one."

"The earlier generations saw God face to face. Why should not we also enjoy an original relation with the Universe?" This a long remembered but unreviewed passage from somewhere in Emerson's writings.

Thus would I intimate my interpretation of the meaning for human good of the life work of the noble fellow-workman in science to whom at this hour we bid a long and affectionate goodbye but in an abounding faith in the Infinite Goodness.

### Evident Humanism . . .

*An appreciation prepared by Dr. Vernon Kellogg, vice-president and chairman of the executive committee of Science Service and permanent secretary of the National Research Council, upon the occasion of the memorial service to Dr. Slosson:*

Edwin Emery Slosson was one of those rare, outstanding combinations of scientific man, literary man, and humanist, who are occasionally produced for our good. His scientific knowledge was sound, his vivacious literary style was unique, and his humanism was clearly evident in all his writing, lecturing, and contacts with his fellow men. His science never made him less a human being. His deep religious instinct never made him hesitate to accept the fundamental truths of science. Science, poetry, and religion all resided peaceably together in him and the com-

bination made him the exceptional personality that he was. In all his activities as professor of chemistry, magazine editor, author of books, and director of a large scientific news service, he revealed this personality. He had always a sweet philosophy and led always a full and happy life.

We shall not see another Slosson soon. His kind comes only occasionally and each example differs in some ways from the others. Our Slosson will never be crowded from our memory, however conspicuous any of his successors may become.

### Adventurous Worship . . .

*Excerpts from an address by Rev. Moses R. Lovell, minister of the Mount Pleasant Congregational Church, at the memorial service, October 20:*

It seems to me he made certain very definite contributions to the modern approach to, and understanding of religion. His lifetime spanned a period when it was true that an arid, dogmatic, scientific naturalism was pitted over against an equally dogmatic and assured religious fundamentalism. He took sides with neither but was among the first of any prominence to take issue with them both, conscious that the little island of man's knowledge is fringed by a vast sea of mystery and that dogmatism is entirely out of place where one can only walk humbled and reverent in the presence of the eternities and infinities. Literalism he saw whether it be of scientific formula or scripture text—is here equally incompetent to express the full reality of life. They are only vague and dusty symbols—man-made—to be outgrown by the onward march of Time and antiquated by spontaneously fresh experience. To lead men out of their dogmatisms of any kind—humbled and reverently to walk in the light of the contemporary world—to get them to see that Truth is a process always in the making, never finished; to inspire them to its discovery and exploration—to join the hands of those in the laboratories with those in the high places of free and adventurous worship—and to lead each to the shrines of the other—that was his chosen mission as I see it. And he truly was one of the earliest, yes, and one of the most successful mediators among us in attempting to (*Turn to next page*)

# Inimitable Sense of Humor . . .

*Excerpts from the address of Dr. Arthur Deering Call, secretary of the American Peace Society, at the memorial services to Dr. Slosson, October 20:*

As with most really great men, he had an abiding, individual, and inimitable sense of humor, with never anything of the guffaw. As I strive to repicture him in my mind, I see first those great eyes of his; not seeming to see me at first, quick-moving eyes capable of royal good humor, of irritation maybe, but reflecting the poise and reality within. He could laugh heartily; but when finishing one of his rich whimsical turns of phrase, there was seldom anything about him save a solemnity which contributed mightily to the fun in those eyes. I remember riding with him from Washington to Briarcliff Manor, New York, where we were for days together in a scholarly conference. I recall how he delivered an address which stood out among all the other learned papers as the first human note of the program. . . .

There was a classic something to

his humor. Among his writings, such for example as "The Art of Keeping Cool and Comfortable," are some of the most deliciously humorous passages ever written in any language. There is the clarity, rich vocabulary and the genius for the apt word, with none of the extravagance, sometimes discovered in Mark Twain. We find this in portions of "Creative Chemistry," indeed throughout most of his works.

I remember how once it fell to my lot to stand in this pulpit and to plead for some thousands of dollars with which to pay off a burdensome debt of this church. We had pledge envelopes and little—they were very little—pencils circulated through the congregation, with the view of getting promises where the money was not at the moment available. After my rather domineering performance, the money being raised, I shall never forget how, at the close, an usher came to the platform with a little scrap of paper upon which Slosson had written these words: "Can we please keep the pencils?" When I read aloud that question, the very

solemn services collapsed in laughter.

Edwin E. Slosson was a gentle man. On a number of occasions he was kind enough to invite me to lunch with him at the Club, when some man from out of town had arrived; mayhap interested in the problem of international peace, with which I have some connections. When the discussion between the visitor and me tended to become a bit involved or controversial, Slosson, with sagacious gentleness and tact, seemed always able to keep the ship of discourse on an even keel.

He was able to stand firmly for his opinions, without any hint of strut. His culture may be phrased as a creative appreciation of the non-economic values of life. One day in his Journal, Emerson scribbled some words on "Natural Aristocracy," winding up with the thought that a gentleman "is the truth's man." It was in that high sense that Edwin E. Slosson was a gentleman.

*Science News-Letter, October 26, 1929*

## A Pioneer Advocate . . .

*Excerpts from the address by John J. Esch at the memorial service to Dr. Slosson, October 20:*

In these days when we are wont to believe that the scientist is not a believer, let us point to Dr. Slosson as a noteworthy example of the man who learned his science acknowledging the over-ruling providence guiding the destiny of mankind. Dr. Slosson was not a politician. He never sought public office, but that is not to say that he did not take a deep interest in all the currents that swept through American life. On the contrary he became an advocate in some of the great moral issues that have been before the public for consideration and determination. He was an advocate of these when advocates were few. He believed in the soundness of prohibition as a public policy. In editorials, on platforms of the Chautauqua, he acknowledged a faith in that policy. He was a pioneer in advocating woman suffrage at a time when advocates of that doctrine were jeered and laughed at. But Dr. Slosson

was not to be deterred from his purpose. He felt that it was an injustice that his wife, a graduate of Cornell University with a degree of Ph. D., should be deprived of the right to vote when millions of the illiterate and criminal classes enjoyed that privilege. He lived to see the amendments of the constitution adopted providing for both prohibition and woman suffrage.

*Science News-Letter, October 26, 1929*

### Worship—Cont'd

bridge the gap between yesterday and today and supplement on the one hand a growing scientific understanding with the legitimate idealism of spiritual experience—and on the other, a stagnant religious outlook with the realistic spirit of the scientific method.

But Dr. Slosson went, I believe, farther than this. To stand reverent in the presence of the mystery—with that he was not content. For him out of the welter of life's experience—out of the scientific melee of theories from Darwin's to Einstein's—and all between them—cer-

tain definite convictions had taken shape in his mind as to the nature of the Fundamental Reality in and behind the World. It was this that set him apart from so many of his colleagues—made him the idol of student and faculty groups who hung upon his words—so understanding of their academic confusion—yet so definitely reassuring that there was a meaning in their maze of life. It was this element in him that had run the gamut of life's quest and still pursued the far off goals—yet in its course had overtaken something real and something vital that made him for so many the accepted guide he was. Whether his conviction began to take shape for him in the scientific formula of Energy—electronic laws—evolutionary processes—we know that however it began—it ended in a sublime confidence in an unseen world—of Intelligence and Law and Purpose—and in the dedication of his life in cooperation with that Reality to the advancement of human aims and hopes.

*Science News-Letter, October 26, 1929*



# Ancient Arctic Village Excavated

New evidence of man's prehistoric life in the Arctic has been dug out of the frozen ruins of a very large Eskimo settlement on St. Lawrence Island in the Bering Sea by Henry B. Collins, Jr., archaeologist of the Smithsonian Institution, and G. Herman Brandt of Cleveland.

St. Lawrence Island and the Diomed Islands in Bering Strait may be called the metropolises of the prehistoric Arctic, said Mr. Collins, who recently returned from his Alaskan expedition. At these two points the people who lived in the north many centuries ago were especially interested in making their everyday possessions and ceremonial objects beautiful with fine carving. Here, too, ceremonials, the foundation of the social life, flourished most, judging by the quantities of carved ivory objects found.

Digging into the stiffly frozen refuse heap of the ancient village, Mr. Collins and Mr. Brandt unearthed ivory

and bone harpoons, meat picks, and many strangely shaped carved objects which today have no known use. Holes bored in some of these and the various shapes suggest possible use as caps for ceremonial wands, charms, and personal ornaments, but not even the Eskimos who occupy the same region today and live under somewhat similar conditions can help solve the prehistoric ivory puzzles. There are no such things in the modern Eskimo household.

Three successive stages of Eskimo culture are traced in the possessions dug out of the hard earth, and the oldest, most deeply buried objects show the finest and most intelligent workmanship. The layer above this contains articles decorated in less aesthetic fashion, and the topmost layer of earth and recent villages contain the craftsmanship of modern Eskimos who have lived within the past 300 years and have forgotten the painstaking skill and the love of de-

sign that their distant ancestors had. It all shows, Mr. Collins points out, that the Eskimos that white men never met were of a higher state of culture than the Eskimos of today.

The age of the most ancient Eskimos may never be determined, but at a rough guess they may be said to have lived at least 1,000 years ago.

"It is becoming evident beyond doubt," the archaeologist stated, "that the oldest articles found represent the most ancient Eskimos in the world and they are older than the Eskimos of Central Canada and Greenland. Somewhere on the shores of northern Alaska or eastern Siberia some members of the Asiatic race adapted themselves to the Arctic conditions and here appeared the typical Eskimo."

Skulls of the oldest Eskimos have not yet been found, but the expedition has brought back skulls of the later prehistoric stage of Eskimo culture.

*Science News-Letter, October 26, 1929*

## Spectrum Test for Color Blindness

The rainbow hues obtained when pure white light is passed through a prism are the best colors to be used in testing cases of partial color blindness, Sir John Herbert Parsons of the University of London, declared at the dedication of the Wilmer Ophthalmological Institute in Baltimore. Sir John, one of the world's authorities on color vision, represented the ophthalmologists, or eye specialists, of England at the dedication exercises.

Color blindness may range all the way from total inability to distinguish colors, when the subject sees everything as gray and black, to mild forms in which the subjects have difficulty in distinguishing one or two shades. Confusion of red and green is a particularly common form, and a highly dangerous one when it occurs in employees of navigation or railway lines. Colored lights and flags are so universally used for signals that public safety depends on accurate testing of railroad and navigation employees. In cases that are not very pronounced, it is extremely difficult to make accurate tests and it is for these cases especially that Sir John recommended the use of spectral colors.

The Board of Trade of London has a special lantern for testing public employees in which the colors are all

shown with the same degree of luminosity or brightness. This lantern is not allowed to be sold on the market, however. The lantern was devised because sailors and railroad men objected to matching colored wools, which they considered altogether too feminine. The wools are commonly used for other types of patients. Both lantern and wool tests are not infallible, Sir John commented, but a trained examiner will be able to tell with these tests whether color blindness exists, even if he cannot tell the degree by these means.

Color blindness is often called Daltonism, from John Dalton, the great English scientist, who discovered it. Dalton himself was a Quaker and shared his sect's abhorrence of bright colors. After receiving the degree of Doctor of Laws, he went about the streets wearing a crimson robe of that doctorate, quite happy and quite unconscious of the agitation he was causing among his Quaker friends. He himself was color blind and did not know the color of the robe he wore. It was 50 years after Dalton's discovery of the condition before any serious efforts were made to eliminate color blindness from the personnel of ship and train crews, Sir John stated.

*Science News-Letter, October 26, 1929*

## Gas Detector Wanted

Wanted: A means to detect minute amounts of deadly mustard gas in the atmosphere. Chemists throughout the world are asked to produce the means. A reward is offered to the most successful.

International competition between chemists has been sponsored by the International Committee of the Red Cross at Geneva for the discovery of a detective reagent of yperite, the deadly mustard gas of the World War. The reagent must detect less than a grain of the yperite in about a quart of air (0.07 mg. in 1 liter), and must be able to trace out the deadly gas without any doubt. The reagent and the apparatus for its use must be easy to construct and capable of being produced in quantity and reasonably.

A sum of 10,000 Swiss francs, about \$2,000, has been granted by the International Red Cross and will be distributed by a jury to one or several of the competitors, according to the value of the work submitted. The contest closes on December 31, 1929. The results will be announced on January 31, 1931. The official languages are French, English, German and Italian.

The reagent adopted shall be called by its author's name and become the property of the International Red Cross.

*Science News-Letter, October 26, 1929*

# Old Chaldaean Gods Not Yet Dead

By FRANK THONE

The gods of old Babylonia are not yet dead.

Nineveh the mighty is a heap of ruins; the Assyrians who dwelt therein and looked with awe upon the great bearded and winged bulls of its gates are forgotten dust. Babylon, that rose before Nineveh, has fallen as low. Ur and Kish and Larsa and all the other cities of the Mesopotamian plain, whose tower-temples were once crowded with worshippers, are given over to the lion and the lizard.

But the beasts from whom their gods descended are still alive. In half a dozen European capitals that were mere hamlets of huts when Nineveh and Babylon were great, there are still a few of the original models from which the bearded bulls took their start. These are the Wisent, the old-world bison, a creature very closely related to the great animal of our own old West that gave Buffalo Bill his name.

It will come as a surprise to many Americans to know that Europe and Asia once had their counterpart of our old thundering herd, and that sixty centuries before Buffalo Bill rode the plains of Wyoming Territory, his prototype, Nimrod the son of Cush, "mighty hunter before the Lord", drove his arrows into their shaggy sides.

Yet so it was. Up in the hills of Elam, where Nimrod lived, there were many wisent; the prehistoric Elamite artists, who drew pictures of their food-animals on the walls of caverns for purposes of magic, made realistic likenesses of them. To them, as to primitive hunting peoples generally, pictures of animals were means of gaining control, insuring success in the chase, providing for the continuance and increase of a meat supply by pictures of the chief bull, the father of the herd.

Even in ancient Elam, animal painting in caverns was an art immemorially old: the Cro-Magnon artist-shamans practiced it 20,000 years or more ago in the caverns of France and northern Spain. And one of their favorite subjects was this same wisent.

The big bull bison came to be looked upon as quasi-supernatural. Meat was the source of life, and he was the source of meat. His attributes became the attributes of heroic manhood, and even of divinity. He had a big beard, so that a big beard became the



*WISENT in the Berlin Zoological Park. His ancestors were models for the god-makers of Elam and Chaldaea*

sign of virility. His voice was like thunder, and his horns were like the new moon; what more natural than to seat him on the throne of heaven and put the lightning in his grasp? But that development came later, probably. We do not know what notions, if any, the early Elamites had of gods in heaven; for though they drew good pictures of animals and rather poor ones of men, they drew no pictures at all of gods.

The big bull wisent could also make a demigod out of a man. The mighty hunter who prevailed against him lived for many generations in tradition. Gilgamesh, king of Erech (wherever that was), seems to have been another Nimrod. Perhaps he was Nimrod under an alias. At any rate, he had a companion as heroic as himself, one Enkidu, who was very literally a bull-headed man—like the Minotaur of Greek legend. Enkidu was either a man who became identified with the wisent overlord, or a wisent who became partly human.

The shadowy beginnings of this cult of the wisent all took place in prehistoric Elam, which occupied a part of what is now western Persia.

The early Elamites were the ancestors of the Sumerians, who founded the first city-states in Mesopotamia not long after the Flood. The Flood, new evidence recently uncovered at

Ur indicates, took place about 3600 B. C. It did not cover the whole earth, but it did devastate the Tigris-Euphrates valley, sweeping away the early inhabitants and leaving the land empty.

Into this fertile, unpopulated, level country flowed the people of Elam, founding the Sumerian cities of Ur and Kish and beginning the first civilization of Mesopotamia. Pre-history passed into history, for the Sumerians invented cuneiform writing and left records of their religious beliefs and heroic legends on tablets of clay. Their artists developed a high degree of skill in sculpture, and especially in metal working, as witness the beautiful animal figures discovered at Ur, the home town of Abraham the patriarch, by the joint expedition of the University of Pennsylvania and the British Museum.

Image-making was a highly practical art in the ancient Mesopotamian cities. Amulets played a large part in religion, and the clay documents of trade and government had to be impressed with the engraved seals of their executors. Tradition hath it that Abraham's father was a dealer in idols, and that Abraham decided to leave Ur because he was sick of the whole business.

But skillful as the Mesopotamian artists became, (Turn to next page)



## Old Chaldaean Gods Not Yet Dead—Continued



MAN-HEADED BULLS and bull-headed men, on the seal of an ancient Sumerian king

they soon lost the realism in depicting the divine or semidivine wisent their ancestors had known in Elam. When a civilization reaches a high level, art somehow tends to become conventional, sophisticated, stylized: witness "the modernist" or "contemporary" art of our own time. Although the Sumerians and Akkadians lived a long time ago they were nevertheless highly civilized, and their art suffered accordingly.

Even more important, perhaps, was the fact that they no longer knew what a wisent looked like. There were no wisent in the plains country; all they had to go by were copies of copies of copies, handed down from one generation to another. The artists were no longer certain that there ever had been such an animal in the flesh; it might have been just a traditional creature like a unicorn or a griffon, or like one of the lion-headed eagles which they themselves were fond of depicting. So the wisent became more and more conventionalized, and as he passed from the hands of the Sumerians to those of the Babylonians and from them to the Assyrians, he shifted farther and farther from the shaggy wild animal of the hills. He became, first, a domestic bull with a beard; then a domestic bull with a false beard obviously tied over his nose. Finally, in Nineveh, thirty centuries removed from the primitive realists of Elam, he was magnified to a super-heroic size, even the figure of the domestic bull was conventionalized into the heavy lines of a draft horse, and his head had become the head of a crowned, wigged and full-bearded human monarch, with the horns indicated merely as upward-curving lines on his tiara.

The evolution is traceable through

the art of the various city-states that successively dominated the Mesopotamian plain. The earliest seals and images show the wisent as a real animal; conventionalized, it is true, but still definitely recognizable. The seal of King Lugal-Anda of Kish, who reigned not long after 3000 B. C., shows three of these animals, rampant and presenting their full faces. These have somewhat "humanized" features; but if you will look at the face of a bison in your municipal zoological garden you will see that it does not require a very great stretch of imagination to give it the big nose and full lips of human types you occasionally see on your own side of the fence.

On the same seal, which depicts a sort of battle royal between animals and demigods, there is the figure of a man who seems to show the effect of association with the wisent with which he is wrestling. His head is almost as heavily haired and bearded as those of the animals, but his nose is not so heavy, and he has no horns. Another near-human figure has the nose and lips of a man, but the ears, horns and body of a bull.

Two of the steps in the conventionalization of the now legendary wisent are found together in the famous Queen's Grave recently unearthed at Ur. One of the little amulets from the Queen's coronet is that of a stylized wisent, with the beard grown fast to the face but carefully arranged and perhaps braided. Another figure from the same ornament is that of an obvious domestic bull, with a false beard apparently tied on its nose. The same kind of an animal head with a false beard tied on formed the decoration of a harp found in the same burial. This is a splendid piece of gold-work, and one of the real prizes of the expedition.

This false beard tied under a tame bull's chin with a string has already aroused some discussion among archaeologists. C. Leonard Woolley, of the British Museum expedition, considers it the sign of a sort of pre-Christian communion service. He says:

"The subject is new and admits of only one interpretation. The bull is, of course, a regular symbol for the god, supports his throne, and is the victim preferred for his sacrifices. The beard is essentially the attribute of divinity. The animal destined for sacrifice can, by the addition of a beard, be transformed into the very god himself, the great bull of Heaven, who gives his flesh to his worshippers to eat in true communion. Such a rite actually performed in the temple with the living beast must be represented by the amulet."

Mr. Woolley's colleague, Dr. L. Le-grain of the University of Pennsylvania, sees the animal in a different light:

"Is it not simpler to place this bull in the same category as Enkidu and the man-headed bison, than to hang the whole communion service on that beard and string? Many animals besides the bull were offered in sacrifice to the gods. The horns and not the beard are essentially an attribute of divinity."

The Sumerians found it hard to forget the wisent of their hill-dwelling hunter ancestors; but the later peoples who came into the plain of the two rivers and learned civilization from Ur had no such difficulty. They had never known the wisent at first hand, and received its images from their instructors as a tradition only. Hence its transformation in the hands of the Babylonians and Assyrians, the latter a people as remote in time from early Kish and Ur as we are from the Rome of Julius Caesar. It is no wonder then that the majestic bulls of Assyria looked so little like their prototypes of Elam.

One factor besides tradition is involved in the insistence of the Assyrians that their guardian bulls be full-bearded. The Assyrians were the Romans of the East—a warlike, conquering, slave-holding people. They had many eunuchs, and in Nineveh beardlessness was the stigma of a eunuch. A man, a warrior, especially a king, had to have a full beard, combed and curled and pomaded. There were (*Turn to next page*)



# Wood Alcohol Blindness Needs Study

The story of the blindness that comes from wood alcohol has not yet been completely told. A further study of this problem might well be made by the newly dedicated Wilmer Ophthalmological Institute in Baltimore, Dr. George E. DeSchweinitz of the University of Pennsylvania suggested in his address at the dedication exercises.

Physicians now generally believe that it is not the wood alcohol but some impurity in it, possibly fusel oil, which is nearly always found in commercial wood alcohol, that causes the blindness. The bad liquor prevalent in recent years often contains wood alcohol and has been the cause of much wood alcohol poisoning and blindness. However, wood alcohol may also be inhaled or it may be absorbed through the skin. This is an important hazard in certain industrial operations.

The dedication of the new Wilmer Institute, devoted to the study and treatment of eye diseases, Dr. DeSchweinitz considered an outstanding contribution to American ophthalmology, which is the branch of medicine devoted to the eye. Other landmarks mentioned by this famous eye specialist were the invention of bifocal glasses by Benjamin Franklin in 1764; and the establishment of the first eye infirmary in this country at New London, Conn., in 1870.

One of the first operations for cataract performed in this country was done by Edward Reynolds of Boston. On his return from Europe, where he had been studying the eye and its diseases, he found his father suffering from cataract. According to his own statement, he "went to his surgery, offered a prayer to the Deity, took a glass of sherry and went ahead to do his best."

Routine examination and care of the eyes of all patients entering the hospital first was established in this country at the hospital of the University of Pennsylvania Medical School by Dr. Charles Norris of that institution. This was a particularly important step in the development of ophthalmology, Dr. DeSchweinitz pointed out. He declared that further development of this medical specialty would come through further cooperation between eye specialist, regular physician and pathologist, the latter being the specialist who studies in the laboratory the changes brought about in the body's tissues by disease. Conditions at the new Wilmer Institute are particularly fortunate both for the individual patient and for the development of the science of ophthalmology.

*Science News-Letter, October 26, 1929*

## Old Chaldaean Gods Not Yet Dead—Continued

never such beards in the world before, neither have there been any since, as were worn by the men of Assyria.

In the meantime, the wisent, forgotten by the high civilizations of antiquity, or remembered only as a legend or apotheosized into the Mesopotamian pantheon, lived on in the dark parts of the map; the plains of Greater Asia and the forests of Europe. When the western world began to stir, under Greece and Rome, he was occasionally noticed by some curious traveler. Tacitus, for example, mentions him. But there is really very little about him in the literature of classical antiquity.

In the Middle Ages two or three writers took notice of him. Albertus Magnus in the thirteenth century, the greatest naturalist between Aristotle and modern times, described the wisent as though he had seen him at first hand, distinguished him from the aurochs, the now extinct gigantic wild ox of the forests, and set down his range as not extending beyond the eastern part of Germany. The wisent was apparently still abundant in Europe.

At the beginning of the present century the wisent herds had dwindled greatly, due partly to hunting and partly to the taking over of their original range for pasture and plowland by the increasing population.



*BULL AMULET, with artificial beard, from the Queen's grave, at Ur*

But there were still probably more wisent in the old world than there were bison in the new. The Czar had a private game preserve in Esthonia, where there was a comparatively large herd; and there was a still larger herd, of possibly 1,100 head, on crown lands in the Caucasus. There were also a few individual animals scattered among the zoological gardens in western European capitals.

Then came the World War. The trampling of armies, and the starva-

tion times of the war and post-war period, played havoc with the Esthonian herd. Not a single animal was left alive. A couple of years ago the Soviet government sent an expedition into the Caucasus to hunt up the 1,100 animals supposed to be there. They could not find one. That herd also is probably wiped out, the work of undisciplined local tribesmen.

The sole remaining hope of keeping the species alive now rests with the fifty or sixty surviving in public and private collections in northwestern Europe, mostly in Germany, the Baltic countries and England. An international society for their preservation has been established.

The situation of the wisent is admittedly serious, but not hopeless, unless an epidemic of some bovine ailment, such as hoof and mouth disease, cuts down the stock too drastically. The splendid herd of American bison now in Yellowstone National Park, numbering about a thousand head, was started from a bull and a few cows owned by a western rancher a generation or so ago. The much larger bison herd in Canada was similarly founded. So the friends of the wisent in Europe still hope to save alive the great beast that Nimrod knew in Elam, and whose very memory was a thing of awe in Babylon the mighty and in Nineveh.

*Science News-Letter, October 26, 1929*

# Newspapers Pay Their Tribute

*Editorial in the New York Times:*

The late Edwin E. Slosson was himself no mean scientist, being especially an authority in chemistry, yet perhaps his greatest service lay in making widely known the results of scientific research by other men. He wrote a whole series of books, besides numberless magazine articles, with the avowed object of bringing home to the intelligence of ordinary readers the wonderful changes which pure and applied science have been working in the world. To this end his literary style was admirably fitted. It was simple and lucid conveying accurate knowledge in a way easily to be comprehended. For eight years he was Director of "Science Service," and in that capacity was the means of furnishing a great amount of trustworthy information about current activities and discoveries in the scientific world. Doubtless this institution, still manned by writers who got their

training from him, will continue to do its useful work.

To popularize abstract truth is always difficult. The danger is that a man who attempts to report a profound scientific study will either fail to grasp its full significance himself or will distort or vulgarize it in his zeal to make it intelligible to the common mind. The successful interpreter of this kind has to distinguish between popularization and what Coleridge called "plebification." This latter fault, into which so many fall, Dr. Slosson skillfully avoided. He was interesting without gush or clap-trap, and did perhaps more than any one in his time first to assimilate himself and then to spread abroad in widest commonalty a just conception of what "star-eyed science" has come to mean in our modern life.

*Editorial in the Washington News:*

In the death of Edwin Emery Slosson, America has sustained a

great loss.

Perhaps the most striking aspect of our life today is the rapidity and variety of our scientific discoveries and mechanical inventions. Quite as astonishing, however, as the progress of science and invention is the ignorance of even the literate populace regarding these matters.

A host of scientists and engineers are continually at work to carry on discovery and to make its application to industry. Few indeed are engaged in clarifying and humanizing this knowledge, so that the man on the street may know the why and wherefore of the marvelous and changing world about him. Moreover, the second task requires more rare and diversified gifts than straight research.

Dr. Slosson was our foremost popularizer of scientific achievement. It will be hard to replace him. We can ill afford to dispense with his uniquely useful services.

*Science News-Letter, October 26, 1929*

## The Writings of Edwin E. Slosson

Dr. Slosson's many writings have allowed and will continue to allow millions to know and appreciate him. There are listed below those books that are still in print:

Chats on Science, New York, *Century*, 1924, \$2.00.

Creative Chemistry, New York, *Century*, 1919, \$3.00.

Easy Lessons in Einstein, New York, *Harcourt, Brace*, 1920, \$1.35.

Keeping up with Science, New York, *Harcourt, Brace*, 1924, \$2.50.

Major Prophets of Today, Boston, *Little, Brown*, 1914, \$2.00.

The Physical Sciences, Chicago, *American Library Assoc.*, 1926, 50c.

Plots and Personalities, by Edwin E. Slosson and June Downey, New York, *Century*, 1922, \$1.75.

Science Remaking the World, edited by Otis W. Caldwell and Edwin E. Slosson, Garden City, *Doubleday Page*, 1923, \$2.50.

Sermons of a Chemist, New York, *Harcourt, Brace*, 1925, \$2.00.

Smith's Intermediate Chemistry, revised and rewritten by James Kendall and Edwin E. Slosson, New York, *Century*, 1922, \$3.25.

Snapshots of Science, New York, *Century*, 1928, \$2.00.

Twentieth Century Europe, by Preston W. Slosson, with a supplementary chapter on modern science by Edwin E. Slosson, New York, *Houghton*, 1927, \$6.00.

Democracy of Knowledge, One of several essays in A Preface to the Universe, Man and His World Series, Vol. I, New York, *Van Nostrand*, \$1.75, 1929.

Energy of the New World, One of several essays in Society Today, Man and His World Series, Vol. V, New York, *Van Nostrand*, \$1.75, 1929.

In order that Dr. Slosson's publications not easily available by purchase may be consulted in libraries by those interested, the following partial list is printed:

\*The American Spirit in Education, Yale University Press, 1921.

\*Great American Universities, Macmillan, 1910.

\*Six Major Prophets, Little, Brown, 1917.

\*Dreams, by Henri Bergson, translated by Edwin E. Slosson, Viking Press.

Chemistry and Psychology, *Feelings and Emotions*, the Wittenberg Sym-

posium, Clark University Press, 1928.

Human Side of Chemistry, *Jour. Industrial and Engineering Chemistry*, Vol. 14, No. 10, pg. 887, October 1922.

Expansion of Chemistry, *Industrial and Engineering Chemistry*, Vol. 16, No. 5, p. 447, May, 1924.

Importance of Rubber in Modern Civilization, *Industrial and Engineering Chemistry*, Vol. 18, No. 11, p. 1104, November 1926.

Coming of the New Coal Age, *Proceedings of the International Conference on Bituminous Coal*, Nov. 15-18, 1926, Carnegie Institute of Technology, Pittsburgh, Penn. Also reprinted in *The Smithsonian Report* for 1927.

Synthetic Kingdom, *Proceedings of the International Conference on Bituminous Coal*, Nov. 19-24, 1928, Carnegie Institute of Technology, Pittsburgh, Penn.

Farm of Tomorrow, *Nation's Business*, October 1928.

Contributions of the New Physics to Religion, *The Congregationalist*, January 26, 1928.

\*Books out of print.

*Science News-Letter, October 26, 1929*



## First Glances at New Books

**SAVAGE GENTLEMEN**—Mabel Cook Cole—*Van Nostrand* (\$3.50). Mrs. Cole and her husband penetrated to the remotest parts of the Philippine Islands in the service of anthropology, for science has its adventurers and even martyrs as well as the Christian missions. Fortunately, while they found savages indeed, they found also that rightly approached your head hunter can reveal himself as a very courteous and hospitable gentleman who will even permit his strange white guests to take a plaster cast of his face.

*Science News-Letter, October 26, 1929*

**AIR PIONEERING IN THE ARCTIC**—Amundsen and Ellsworth—*National Americana Society* (\$35). A splendidly illustrated commemorative volume on the two polar flights of Amundsen and Ellsworth. The excellence of the photographs and their reproductions together with the fact that this is Ellsworth's tribute to his explorer-companion, the great Amundsen, will give this book a lasting niche in the records of exploration.

*Science News-Letter, October 26, 1929*

**TULAREMIA**—Walter M. Simpson—*Hoeber* (\$5). The story of the new disease, its history, diagnosis, treatment and pathology are given in "a clear, complete and authoritative manner" in the words of Dr. Edward Francis, one of the foremost investigators of the disease, who has written a foreword for this text. The book will be welcomed by physicians, bacteriologists, pathologists, and other scientists, but is too technical for the average reader.

*Science News-Letter, October 26, 1929*

**THE MIGHTY MEDICINE**—Franklin Henry Giddings—*Macmillan* (\$2). Not medicine at all but a new theory of education is the theme of this book which will be valuable for all who are interested, professionally or otherwise, in education, even though many may not agree with the author's ideas. By "Mighty Medicine" is meant the "medicine" of the magicians, priests and sorcerers of primitive tribes, which finds its counterpart in modern prejudices and superstitions.

*Science News-Letter, October 26, 1929*

## Nature Treats Soil

When a farmer plants a clover crop on a piece of poor land for the purpose of enriching it, and later on puts the field into some other crop, he is only duplicating a process that happens without human assistance wherever there are raw or impoverished soils. This is indicated by the results of observations by Dr. Elmer Campbell of Transylvania College.

Dr. Campbell studied a series of raw gravel exposures in Indiana and also a number of exhausted and abandoned fields in various parts of the South. He found that in all cases the larger proportion of legumes in the total vegetation was found on the poorer soils, and that as legumes increased the nitrogen content they were gradually replaced by other wild plants. For instance, on the Indian gravel he found the plant population to be 100 per cent. sweet clover on a three-year-old exposure, but on a ten-year-old strip sweet clover made up only 20 per cent. of all the plants present.

*Science News-Letter, October 26, 1929*

## Stone Forest Found

A newly discovered petrified forest, the only one so far found with the trees lying as they fell millions of years ago, is reported by the U. S. Bureau of Reclamation. It was found by a roadbuilding expedition on the Lower Yellowstone reclamation project, about three miles southwest of Savage, Montana.

The petrified forest covers several acres. Some of the trees are ten feet in diameter and over 100 feet long. They all lie with their tops pointing in the same direction, indicating that they may have been blown down by a storm. The shape of the trunks suggests that they belonged to the same forests that supplied the materials for the nearby beds of coal.

*Science News-Letter, October 26, 1929*

## Leaf-Growing Record

A giant-leaved waterlily of Japan and China probably holds the world's record for speed in leaf-growing, according to a note in the British scientific journal, *Nature*. This plant, a relative of the *Victoria regia* of South America, expands its four-foot floating leaves in less than nine days, increasing their diameter at a rate of nearly a half-inch an hour. At that rate of growth they produce between 15 and 25 square inches of leaf in sixty minutes.

*Science News-Letter, October 26, 1929*

## NATURE RAMBLINGS

By FRANK THONE



*Armadillo*

Suits of armor as house ornaments are too big for present-day apartments and too costly for any but wealthy persons; yet you may hang up a suit of armor in your modest domicile at no more than the curio shop's price, of an armadillo basket. For this queer little animal of the American tropics and subtropics is no less a wearer of armor than was doughty old Charlemagne himself. When the Spaniards first climbed up on the plateaus of Mexico they found these creatures in coats of mail and gave them the name by which they are still known. "Armadillo" is a Spanish word that translates as a whole English phrase: "little fellow in armor."

However, the armadillo is armored not because he is a warrior but because he is a pacifist. He has neither the will to fight nor weapons to fight with if he would. His claws and teeth are alike negligible as offensive armament. All he can do when attacked is roll himself up in a ball and wait for his enemy to tire of the siege and go away. If the enemy is more persistent than the armadillo, or if he can penetrate the armor wherein the armadillo trusteth, then there is just one less armadillo in the world. And if the enemy is a man, the walled-up armadillo is just so much the more convenient to pick up and toss into a truck. And presently there is another armadillo basket in the curio shop.

To compensate for the losses to the tribe wrought by such aggressors, the armadillo is very prolific. Mrs. Armadillo will probably be the last mammal in the world to be converted to birth control: her babies invariably arrive as quadruplets.

*Science News-Letter, October 26, 1929*

## Radium for Mme. Curie

For the past few weeks America has been hostess to the greatest woman scientist the world has ever known. Mme. Marie Curie, co-discoverer of radium, came here to accept a second gift of a gram of the precious substance from her friends and admirers in this country.

When the first gram was presented to her, in 1921, she turned it over to the Curie Institute of the University of Paris. The second gram will be given to the Warsaw Cancer Hospital, which since 1921 has rented a gram, Mme. Curie herself paying the rental with the income of a money gift she received with the first gram of radium. Warsaw is Mme. Curie's native city, although she has worked and lived most of her life in Paris.

Mme. Curie and her husband, Pierre Curie, discovered this rare and valuable element, but they scorned to make any personal profit from their discovery. They gave it to the public together with the methods they evolved for producing radium. These same methods are in use today in the radium industry. For years these great and generous scientists struggled with a meager income and without even an adequate laboratory. Pierre Curie, struck by a truck, died in 1906 without ever having a proper laboratory in which to use his great talents.

Mme. Curie finally acquired the laboratory, planned too late for her husband to enjoy, in the Curie Institute. However, the small supply of radium in her laboratory was needed by the government during the war, and after the armistice she found herself without any of the precious substance. Then her admirers and friends in America came to the rescue with the gram of radium and the money which was meant to make living conditions easier for this great woman who had been in most straitened circumstances. Characteristically, she used it to rent radium for the Warsaw Cancer Hospital.

*Science News-Letter, October 26, 1929*

## Pavlov Honored

Prof. Ivan Pavlov, who recently attended the international congresses of physiology and psychology in this country, received a gift of \$50,000 for his laboratory as an eightieth birthday gift from the Soviet government when he returned to Leningrad. The government also closed to traffic a street, the noise from which might interfere with his experiments.

*Science News-Letter, October 26, 1929*

The most rapid readers do not pronounce the words mentally but read wholly or almost wholly with the eyes, according to a Columbia University professor.

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## Island Disappears

A volcanic island formed last year by a submarine eruption in Sunda strait, near Verlatern Island, Java, has now disappeared beneath the sea, the U. S. Hydrographic Office has been informed by the Dutch authorities.

*Science News-Letter, October 26, 1929*

A decoy duck made and used by prehistoric Indian hunters has been found in a cave in Nevada.

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# New Weapon Against Germs Studied

Equipped with a brand new weapon against disease, scientists have failed to get the hoped-for results with it because they have not known exactly how to use it. Bacteriophage, potent germ killer discovered by the French-Canadian, Dr. F. d'Herelle, now a Yale professor, gave promise of being the world's greatest disease conqueror. It has fallen short of fulfilling this promise because the men who had to use it have not understood it well enough to get uniformly good results.

The age of the material, the method of administration, and the amount of the dosage are points that must be settled in order to get the most successful results with this new weapon, according to one of its advocates, Dr. N. W. Larkum of the Michigan Department of Health.

Bacteriophage kills germs in a test tube and actually dissolves them. The hope of its discoverer and sponsors is that it will do the same thing to germs in the human body. In some cases it has killed the germs that were attacking the body, in others it failed to do so. Dr. Larkum feels that the failures occur when the phage is used incorrectly, through ignorance of the best conditions for it to do its work.

Possibly the phage is potent only at a certain stage of its development. Up to now, the age of the material has not been given any consideration, Dr. Larkum pointed out. The method of administration has been chosen with a view to getting the stuff into contact with the bacteria. Dr. Larkum suggested that it may be better to bring the material into contact with

the susceptible tissues of the body, in order to make them immune to attacks of the disease germs, and thus check the spread of the germs through the body. The matter of how large a dose to give also needs to be determined scientifically.

"At present the selection of the dosage is entirely arbitrary, based upon some success attending a given dose. It is entirely logical to conclude that as many failures have been due to excessive dosage as have been due to an insufficient amount. Until further light has been shed upon these various factors in bacteriophage therapy, one is scarcely justified in condemning the method," Dr. Larkum concluded.

*Science News-Letter, October 26, 1929*

## Emotions Cause Disease

Nobody really overworks as far as mind and body go, but we live at such a high emotional tension that we become tired and jaded and require violent stimulation to keep us going. Also, this high emotional tension is the cause of a number of diseases, Dr. Charles P. Emerson of the Indiana University School of Medicine said in a communication to the New York Academy of Medicine.

"Under certain conditions a strong emotion can inflict a physical injury just as truly as can a knife," Dr. Emerson said. "The injurious effect of a long maintained depressing emotion has never, we feel, been appreciated. We endure well the effects of strong emotions, if only their duration is brief or their qualities varied. That the depressing, contractile, paralyzing emotions called fear, apprehension, worry, etc., weigh heavily in the bal-

ance against a patient during the course of an infection has long been suspected, but since these phenomena cannot be weighed, measured nor rendered objective, we cannot at this point consider them seriously. The effect of these emotions on the glucose tolerance of a previously well standardized case of diabetes mellitus can, on the other hand, be measured in terms of sugar in the urine, in milligrams of glucose in the blood stream, and of units of insulin necessary to restore the sugar-free condition."

Dr. Emerson urged physicians to consider more the emotional, psychological aspects of disease than has been done in the past. This new phase is just as much a part of regular medicine as are the physical and biochemical aspects with which physicians have long since become familiar.

*Science News-Letter, October 26, 1929*

## "False Mummies" Explained

A plausible explanation of the strange "false mummies" of Egypt has at last been offered.

Almost every collection of Egyptian antiquities contains these false mummies. A bundle may be shaped like a cat, crocodile, bird or other sacred creature, but when the package is opened or examined by X-ray it reveals only a few scraps of skin, an isolated head, or some oddly assorted bones.

The solution of the mystery appears to be that Egyptian embalmers were not scrupulously particular about pre-

serving each sacred bird or beast intact. When the attendants cleaned up the salt tanks in which the animals were soaked in the process of mummification, they would find in odd corners the head of a cat or bird, a few stray bones or feathers. Embalming was supposed to prepare the bodies for eternal life, but no incomplete creature could attain such an end. So the embalmers dared not throw away the spare parts, but bundled them together to save the animals for eternity.

*Science News-Letter, October 26, 1929*

## Deposits in Ocean

Sea water contains 1,500 tons of solid matter per cubic mile, and since the waters of the deep sea cover 115,000,000 square miles, with an average depth of two miles, they must contain about 234,000,000 tons of solid matter in suspension. These figures were obtained by Prof. W. H. Twenhofel of the University of Wisconsin as a result of his research in deep-sea oceanography.

Prof. Twenhofel believes that the deposits of this sediment under the deep sea are very much deeper than geologists have thought they were in the past. He estimates that there is an annual deposit of 20 tons of mineral matter over each square mile of ocean basin. This means, if current estimates of geologic time are correct, that the total deposit reaches the stupendous sum of 80,000,000 cubic miles.

Some of this solid matter is contributed to the sea by the atmosphere in the form of dust. The dust fall from the atmosphere in Europe amounts to 266 tons per square mile each year, and this falls on the sea as well as the land.

Another important contribution to the sediment at the sea bottom is from calcareous organisms. There is also a great deal of material of volcanic origin.

*Science News-Letter, October 26, 1929*

An authority on population problems has said that it is unusual for a race that has no knowledge of agriculture to reach a greater density than one person to a square mile.

## Indians Pulled Teeth

Indians who lived in New Mexico in prehistoric times, in the centuries before Christ, practiced tooth extraction. This is the conclusion of modern dental scientists who have examined a collection of jaws of pre-Pueblo Indians. It is considered likely that the Indians had some instrument made of hard wood for this dental operation, for none of the teeth which were removed from the jaws had been loose enough to remove with the fingers alone.

The discovery is of importance since no primitive people have been heretofore known to adopt this simple procedure for the relief of pain. The ancient Egyptians, who were surprisingly advanced in some of their surgical knowledge and surprisingly ignorant in other surgical fields, did not know how to pull teeth, although their teeth show that they must have suffered agonies at times.

*Science News-Letter, October 26, 1929*

## Worms 11 Feet Long

Earthworms longer than a man and an inch in diameter are reported in the British scientific magazine *Nature* as the quarry of a naturalist's hunt in southeastern Australia. Average specimens range from four to six feet in length, and one nine feet long was observed by Charles Barrett, member of the expedition. An extreme length of eleven feet was reported, though not seen, on this expedition.

*Science News-Letter, October 26, 1929*

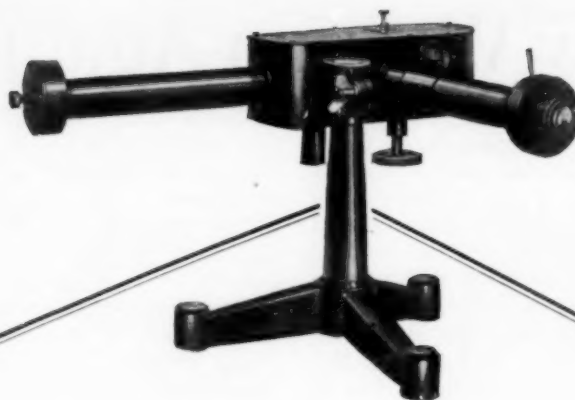
## Prehistoric Deafness

We think of the Indian as sharp of vision, keen of hearing and swift of foot, yet many of America's aborigines were blind and stone deaf.

The subject is being investigated for the American Medical Association, and preliminary results show that the growth of small, hard, ivory-like tumors in the outer ear passages prevent the entrance of sound waves. Such tumors, called osteomata, have been seen in the ear passages of Indians from Arkansas, New Mexico, the San Nicolas Island off the California coast, and abundantly in Peru.

Only a surgical operation could secure relief, and while some of the aborigines, especially the ancient Peruvians, were expert head surgeons, none attempted the removal of the tumors and the restoration of hearing. Tumors of this kind today are very rare, some ear specialists never having seen one. The cause of the growth of the ancient tumors is being investigated.

*Science News-Letter, October 26, 1929*



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# CLASSICS OF SCIENCE:

## Science and Human Life

Many of the things said by Dr. Slosson very justly merit inclusion in a series of Classics of Science, because of his genius for finding the abiding significance of events and trends in the endless procession of new things—"news"—that passed his editorial lookout post. To crystallize in arresting and rememberable sentences the value "sub specie aeternitatis" of things seen only for the moment was his great contribution to science and to the life of the commonwealth as a whole. Therefore some quotations from a few of his well-known books and from other of his writings are given here.

### CREATIVE CHEMISTRY: *The Century Company. 1921.* Page 11:

Chaos is the "natural" state of the universe. Cosmos is the rare and temporary exception. Of all the million spheres this is apparently the only one habitable and of this only a small part—the reader may draw the boundaries to suit himself—can be called civilized. Anarchy is the natural state of the human race. It prevailed exclusively all over the world up to some five thousand years ago, since which a few peoples have for a time succeeded in establishing a certain degree of peace and order. This, however, can be maintained only by strenuous and persistent efforts, for society tends naturally to sink into the chaos out of which it has arisen.

It is only by overcoming nature that man can rise. The sole salvation for the human race lies in the removal of the primal curse, the sentence of hard labor for life that was imposed on man as he left Paradise. Some folks are trying to elevate the laboring classes; some are trying to keep them down. The scientist has a more radical remedy; he wants to annihilate the laboring classes by abolishing labor. There is no longer any need for human labor in the sense of personal toil, for the physical energy necessary to accomplish all kinds of work may be obtained from external sources and it can be directed and controlled without extreme exertion. Man's first effort in this direction was to throw part of his burden upon the horse and ox or upon other men. But within the last century it has been discovered that neither human nor animal servitude is necessary to give man leisure for the higher life, for by means of the machine he can do the work of giants without exhaustion.

Man is the tool-using animal, and the machine, that is, the power-driven tool, is his peculiar achieve-

ment. It is purely a creation of the human mind. The wheel, its essential feature, does not exist in nature. The lever, with its to-and-fro motion, we find in the limbs of all animals, but the continuous and revolving lever, the wheel, cannot be formed of bone and flesh. Man as a motive power is a poor thing. He can only convert three or four thousand calories of energy a day and he does that very inefficiently. But he can make an engine that will handle a hundred thousand times that, twice as efficiently and three times as long. In this way only can he get rid of pain and toil and gain the wealth he wants.

Gradually then he will substitute for the natural world an artificial world, molded nearer to his heart's desire. Man the Artificer will ultimately master nature and reign supreme over his own creation until chaos shall come again. In the ancient drama it was deus ex machina that came in at the end to solve the problems of the play. It is to the same supernatural agency, the divinity in machinery, that we must look for the salvation of society. It is by means of applied science that the earth can be made habitable and a decent human life is made possible. Creative evolution is at last becoming conscious.

### SERMONS OF A CHEMIST: *Harcourt, Brace and Company. 1925. Page 16:*

Continuously, in and out, over and under, circle the elements; never at rest, never the same, all bent on the mission appointed them before the creation of the world. Never faltering, never deviating, each atom follows the path through empty space marked out for it millions of years ago; a path so complex that no mathematician can calculate it for the thousandth part of a second, yet so regular that no variation can be detected in years. Back and forth without stopping moves the shuttle of matter, eternally weaving the living garment of God. No eye can follow its swift movement, no imagination can conceive it, but all that is, is what it seems to be.

As Jacob on his pillow of stone saw in his vision a ladder with angels ascending and descending on it, so we, with our vision clarified by

science, can see the atoms as the angels of Almighty God, ascending and descending through the scale of life, now carried about by the air, then washed down by the rain, then buried in the soil, then caught up by the hungry rootlets and carried through the sap and stored in the seed or the fruit; then rising to a fuller life in some animal; then caught up and made part of the mechanism of thought and feeling in man; then cast out with the breath to begin again their wanderings; obedient to God's laws, whether in high or low estate, equally doing God's service whether in the brain of a philosopher or in the body of a microbe or buried in a rock, apparently useless and forgotten for thousands of years. So forever is repeated the miracle of the Garden of Eden when God first formed man out of the dust of the ground, and breathed into his nostrils the breath of life and man became a living soul.

### EASY LESSONS IN EINSTEIN: *Harcourt, Brace and Company. 1920. Page 102:*

In all such discussions we must bear in mind that "law" in the scientific sense of the word means, not a commandment or a rule, but merely a way of working. It is a concise description of how things behave. There are no laws in Nature; there are only laws of Nature; that is to say, laws drawn out of Nature (or, if you prefer Latin to Anglo-Saxon, laws deduced from Nature) by man for his own convenience in thinking. Physical laws are therefore essentially psychological; mere memory schemes, calculating machines. The law of gravitation is no more gravity than the funny wriggles that my stenographer is making in her notebook are the sounds I am uttering. To change geometries does not require any such effort as to change cars. It means merely changing our minds. But this is harder for some of us than it ought to be. Here is where the theory of relativity will be of use to us. Poincaré, the French mathematician, cousin of the late President, said: "These two propositions, 'the earth turns round' and 'it is more convenient to suppose the earth turns round' have the same meaning. There is nothing more in

## Science and Human Life—Continued

the one than in the other." If Galileo and his inquisitors had understood the Principle of Relativity it might have saved them both trouble; the former temporary imprisonment and the latter everlasting disgrace. A revolution in science is simply a change in mental attitude. Maybe a political revolution is no more.

**KEEPING UP WITH SCIENCE:** *Harcourt, Brace and Company. 1924. Page 1:*

Modern complex industrial life plunges every one into a scientific environment so that no one can escape the deluge of scientific terms. But he may get them wrong. . . .

Some of these notions are false, some are hypotheses which may or may not be true, some are truths badly expressed or placed in a misleading context. The result is that the layman either becomes skeptical of all science or credulously falls victim to the first faker who can manipulate imposing catchwords. . . .

Unfortunately those who trade on the name of science for profit, or who are fanatically sincere about some absurd theory, are better advertisers than the real scientists. They make more noise, assert themselves more dogmatically, make more sweeping claims and get attention first. They are not handicapped by the hesitations, uncertainties, shyness, professional caution of the true man of science. Reservations and qualifications make dull reading, and the necessary complexities of the scientific vocabulary frighten away the casual reader. Moreover, it is to be feared that some scientists are intellectual snobs and do not care whether the layman understands or not. They leave the field to pseudo-science without a struggle.

On the other hand, in the long run real science prevails over what the Bible terms "science falsely so-called" because it can prove itself by its works. "By their fruits ye shall know them," is the experimental method. Only real chemistry can provide the basis for the big industrial inventions which the public demands and appreciates. Only real medicine can in the long run lower the municipal deathrate.

There is another test of real

science; its honesty. Fake science always tries to create mystery, to use long words for the purpose of creating confusion, to rely on occult forces and secret processes, because only so can it remain a profitable monopoly. Real science relies on tests and experiments that any one can duplicate and does not add artificial difficulties to the real mysteries of nature. In a word, the real scientist and the faker are both talking to the layman in unknown tongues, but the real scientist is trying to make himself understood, the faker is trying to make himself misunderstood.

**THE SYNTHETIC KINGDOM:** *Proceedings of the Second International Conference on Bituminous Coal. 1928. Page 94:*

Modern history can be told in many ways, and all of them true, though only when combined are they the whole truth. We can write in terms of sea power with Mahan, in terms of climate with Huntington, in terms of race with Lothrop Stoddard, in terms of class with Karl Marx. But surely one of the most significant ways of writing it is to write it down with carbon pencil in some such terms as this:

Historians generally concede that the human race has more greatly changed its habits of daily life, thought and action in the last two hundred years than in any previous two thousand. This new Carboniferous Era has been based on natural energies, most of them found in fossil fuel.

**SNAPSHOTS OF SCIENCE:** *The Century Company. 1928. Page 88:*

Ignorance of the laws of nature excuses no one. We have to live in accordance with them if we are to live at all, and the more we know of them the better we can live. The unprecedented expansion of civilization in the last two centuries, the immense increase in wealth, and the general diffusion of the comforts and conveniences of life must be credited chiefly to applied science, and especially to the physical sciences, since the biological, psychological, and social sciences have not yet developed to a point where they

exert so powerful an influence upon mankind.

It is interesting and important to learn about things far away and long ago, such for instance as the habits of the auks of the Arctic or life in Egypt in the time of the Pharaoh Tut-ankh-Amen; but after all, we can live and even be happy in complete ignorance of these things. But we cannot carry on our work for a day without making some use of the laws of the physical sciences, whether we are conscious of them or not.

Fortunately, we are forced to learn a lot about them in our infancy, long before we go to school. It is pounded into our brains by hard knocks. We have to acquire a practical knowledge of the law of gravitation in childhood before we are able to walk, and we learn a good deal about chemistry during that period by the experimental method of putting everything into our mouths and so testing it by taste and smell, which are the two senses that distinguish substances by their chemical constitution.

So every grown person, though he may never have been to school, gains through his daily life and occupation a considerable knowledge of the physical sciences. He gets, for instance, a certain familiarity with the physical principles of machinery, and with the chemical properties of metals and foods. But the knowledge so accidentally acquired is fragmentary and often fallacious. The information that he has so picked up is not connected, and he cannot apply it to new problems. Such a man knows more than he knows he knows, but he is not able to make full use of it because he has never connected his facts or generalized his ideas. In short, such a casual collection of fragmentary facts is not science but merely the raw material for science. What such a man needs is to read some simple systematic book on the physical sciences, and he will then find that the practical points he has picked up will fall into their proper places in the general laws, and that these laws will extend his vision and throw new light on all that he sees and does ever after. To study physics and chemistry is like giving sight to a blind man. It opens to him a new world of undreamed-of beauty, meaning, and possibilities.